

REMARKS

Claims 1, 4-8, 10 and 11 are pending in this application. By this Amendment, claim 1 is amended. Support for this amendment may be found in the present specification, for example, at paragraphs [0062] and [0063] and claim 11. No new matter is added.

Entry of the amendments is proper under 37 CFR §1.116 because the amendments:

(a) place the application in condition for allowance (for the reasons discussed herein); (b) do not raise any new issue requiring further search and/or consideration (as the amendments amplify issues previously discussed throughout prosecution); (c) satisfy a requirement of form asserted in the previous Office Action; (d) do not present any additional claims without canceling a corresponding number of finally rejected claims; and (e) place the application in better form for appeal, should an appeal be necessary. The amendments are necessary and were not earlier presented because they are made in response to arguments raised in the final rejection. Entry of the amendments is thus respectfully requested.

In view of the foregoing amendments and following remarks, reconsideration and allowance are respectfully requested.

I. Rejection Under 35 U.S.C. §103(a)

The Office Action rejects claims 1, 4-8, 10 and 11 under 35 U.S.C. §103(a) over U.S. Patent No. 6,468,718 to Kang et al. (hereinafter "Kang") in view of U.S. Publication No. 2003/0198894 to Mizutani et al. (hereinafter "Mizutani") or U.S. Patent No. 4,731,273 (or U.S. Patent No. 4,751,269) to Bonk et al. ("Bonk"). Applicants respectfully traverse the rejection.

A. Claims 1, 4-8, 10

Independent claim 1 is amended to even more clearly distinguish over the applied references. Specifically, independent claim 1 is amended to recite (in-part):

the compound, the condensation product thereof or the resin produced from the compound is contained in an amount of 50

mass% or more in a solid content of the anti-reflective coating forming composition wherein the anti-reflective coating forming composition is an underlayer of a resist and subjected to dry etching.

The applied references disclose no such combination of features. Specifically, the applied references do not disclose and would not have rendered obvious the compound of claim 1 contained in an amount of 50 mass% or more in a solid content of the anti-reflective coating forming composition wherein the anti-reflective coating forming composition is an underlayer of a resist and subjected to dry etching.

The Office Action asserts that Kang discloses an anti-reflective layer that comprises "a polymer having an anthracene substituent, may have a triazine initiator, and comprises any known crosslinker such as a melamine compound." However, the Office Action acknowledges that Kang fails to disclose the instantly claimed compound of formula (I). The Office Action asserts that Mizutani resolves this deficiency by disclosing a resist composition comprising a crosslinking compound, the crosslinking compound having a compound meeting the instant claim limitations. The Office Action further asserts that Bonk also resolves this deficiency by disclosing adhesive resins having tetrabutoxymethyl urea, which is described as a preferred compound of formula (I) by the instant specification. Applicants respectfully disagree.

There would have been no reason to use the teachings disclosed in Mizutani to arrive at Applicants' independent claim 1 because an anti-reflective coating that is an underlayer of a resist is an entirely different component of a lithography system than the resist itself. Specifically, as is known to a person having ordinary skill in the art of lithography and as is described in the instant specification at least at paragraph [0002], the anti-reflective coating is applied "between the photoresist and the substrate to be processed." In this way, a teaching regarding the composition of the resist has nothing to do with the composition of the anti-reflective coating. Furthermore, during the use of a mask pattern such as that disclosed in

Mizutani, the resist *must be dissolved* in the developer at the stage where the resist was formed on the anti-reflective coating. Specifically, as the composition in Mizutani contains a resin and a crosslinking agent, and has an area dissolved out after exposure to light and development, the crosslinking agent must not be contained in a high content in order to exert the action and effect as a resist. Whereas, an anti-reflective coating that is an underlayer of a resist *must not be dissolved* in a solvent for the resist nor in a developer used in the developing step, at the stage where the anti-reflective coating was coated and baked.

Bonk does not overcome deficiencies of Kang with respect to claim 1, as Bonk merely discloses adhesive resins, not anti-reflective coatings. Furthermore, Bonk also does not teach including the recited compounds in an amount of greater than 50% by weight, but instead merely discloses including a crosslinking agent in an amount of 0.8 to 10% by weight (column 3, line 7).

Finally, the applied references, considered either separately or combined, fail to teach or suggest any reason or rationale to include the compound of formula (1) in an amount of 50% or more. The instant specification discloses the solid content of the compound of formula (1) in Examples 1-9 and Comparative Examples 1 and 2. The amount in each Example and Comparative Example is reproduced below for convenience.

Sample #	% of Compound (formula 1)
Example 1	97.0
Example 2	97.2
Example 3	84.6
Example 4	87.6
Example 5	77.6
Example 6	80.6
Example 7	66.7
Example 8	60.0
Example 9	96.7
Comparative Example 1	20.5
Comparative Example 2	19.7

Tables 1 and 2 of the instant specification, in view of the above Table, show that the dry etching rate is proportional to the amount of the compound of formula (1). That is, the dry etching rate is high in the Examples and low in the Comparative Examples. These results show that anti-reflective coatings require a high amount of the compound of formula (1) and resists require a low amount thereof.

Therefore, claim 1 would not have been obvious for at least the reason that the cited references, taken separately or together, do not teach an anti-reflective coating forming composition that is an underlayer of a resist and subjected to dry etching and comprises the recited compound in amounts of greater than 50% by weight based on the total solid content of the composition.

Thus, independent claim 1 would not have been rendered obvious over the applied references, and is patentable for at least the reasons discussed above. Therefore, dependent claims 4-8 and 10 are also patentable for at least the reason that claim 1 is patentable.

Accordingly, reconsideration and withdrawal of the rejection with respect to claims 1, 4-8 and 10 are respectfully requested.

B. Claim 11

Claim 11 recites (in part):

coating anti-reflective coating forming composition
according to claim 1 on a substrate and baking it to form an anti-
reflective coating;
forming a photoresist on the anti-reflective coating

and is patentable over the applied references for reasons similar to those stated above with respect to claim 1.

Therefore, claim 11 would not have been rendered obvious by the applied references. Accordingly, reconsideration and withdrawal of the rejection with respect to claim 11 are respectfully requested.

II. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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Attachment:

Petition for Extension of Time

Date: November 10, 2008

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